# NOAA Teacher at Sea
# Kimberly Pratt
# Onboard NOAA Ship MCARTHUR II
# July 5 – 24, 2005

**Log 1**
Date: July 2, 2005
Location: Seattle, WA - In port

Personal log:
Today has been a very busy and productive day. After getting up at 5:30 AM, I boarded Alaska Airlines and headed to Seattle. Upon landing in Seattle, I was greeted by a cloudy, humid day and luckily no rain. After taking a shuttle to the NOAA Headquarters I caught my first glimpse of the McArthur II - I was not disappointed! The ship was larger than I expected with many decks. I met with the 3rd Mate - Donn Pratt! (No, we are not related!) He gave me the grand tour, showed me my room and helped me learn the terms starboard and port. Starboard means the right of the ship when looking towards the front and port is the left side of the ship when looking towards the front. Also starboard side is odd, with green coloring and port is even with red coloring. My first lesson of the trip! After unpacking I then met with the Chief Scientist, Karin Forney, who again toured me around and showed me the various locations of where we'll be doing observations.

In the short time I've been here, I've already been impressed with the friendliness of all on board, the organization of the ship and the equipment they have for research. I hope to learn more about the ship in the upcoming weeks, and report back some amazing whale and dolphin sightings as well as the progress of the research we're doing. I look forward to an exciting, educational and fun trip!

Kim

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**Log 2**
July 5, 2005
Elliot Bay, WA

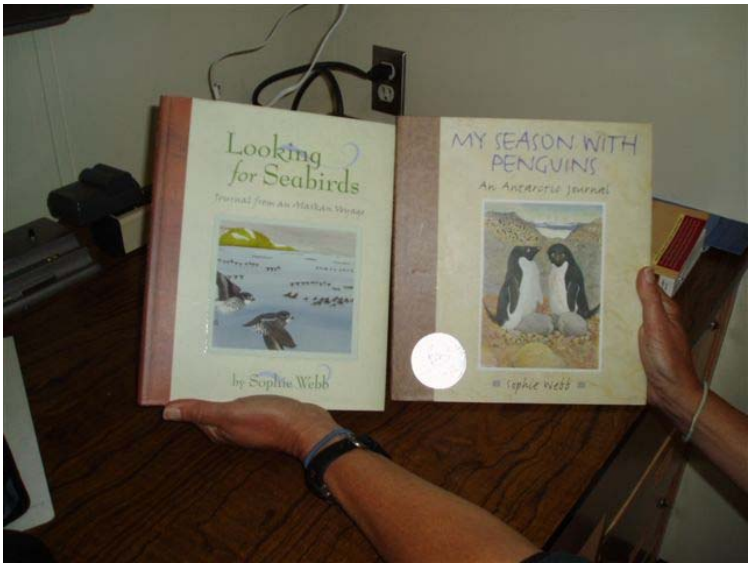
Latitude: 47.37.2' N
Longitude: 122.22.3'W
Visibility: 8-10
Wind Speed: 10 knots
Sea Wave Height: 1-2 ft
Sea Swell Height: 0
Sea Level Pressure: 1012.2
Cloud Cover: 8/8, AS, AC
Temperature: 20 Celsius

Scientific Log:
Chief Scientist Karin Forney called all the scientists together for our first meeting at 0930 in the dry lab. She gave an overview of the schedule of operations for our cruise and explained the day's activities which were drills, CDT calibration, and scientist set-up and prep. The CDT or Conductivity, Temperature/Depth devices are used to get readings of salinity, temperature, depth, density and conductivity of the ocean water. The CDT will be lowered to 500 meters when deployed. Scientists also set-up their stations and prepared for their busy days ahead. I worked with Rich Pagan, Sophie Webb, and Peter Pyle to create range finders out of pencils. The range finders will help them determine whether the birds they observe are at 300, 200 or 100 meter distance.

Personal Log:
Beautiful fireworks, warm weather and a wonderful array of boats showed Seattle in its glory! I spent the evening on board the McArthur which had an awesome view of the fireworks. What a send off for our cruise the next day.

I awoke to the smell of breakfast cooking and looked forward to today's launch. We left Seattle, at 0930, and headed out of Lake Union. After motoring through two draw bridges – the Fremont Bridge and the Ballard Bridge, we then got a special treat by going through the government locks – or the Hiram M. Chittam locks. Locks are used to raise or lower water levels to allow passage from one body of water to another. In this case, we were leaving Lake Union (freshwater) and going to Elliot Bay (salt water). We waited patiently as the gates closed, and the water lowered us down for passage into Elliot Bay. Upon leaving Elliot Bay, we dropped anchor to start the CDT calibration. We then had an abandon ship drill in which I had to put on a very funny orange suit, affectionately know as Gumby suits. As soon as it was donned, Chief Scientist Forney

and Jan Rolleto ran to get their cameras because I looked so comical. Finally, we had a fire drill and then the scientists set to work. It was really fun working with Rich, Jim and Sophie. Sophie Webb has published two children's books. "Looking for Seabirds" and "My Season with Penguins" which are very well done and illustrated. Recommended reading….. Right now, we're still anchored in Elliot Bay with a beautiful view of the Seattle skyline, the Space Needle and Mt. Rainer. Tonight we'll head off to the ocean and all the wonders we will see.




Till later…
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**Log 3**
Date: 7/07/05
Day #5

Latitude: 44, 20, 7 N
Longitude: -126, 27, 7 W
Visibility: 10
Wind direction: 220
Wind Speed: 220
Sea Wave Height: 12
Swell Wave Height: 3-5
Sea Level pressure: 16.1
Cloud Cover: 7/8, AC, AS, CU
Temperature: 17.1

Scientific Log:
Yesterday, 6/7, we had the good fortune to see a school of Pacific White Sided dolphin, which swam at our bow for about ½ hr. A biopsy was taken of two of the animals, by Scientists, Tim O'Toole and Juan Carlos who used a crossbow with a special "grabber" attached to the arrow. A piece of skin and a piece of blubber will be analyzed. Also swimming with the school were 2-3 baby dolphins. Also spotted was a Humpback whale. A very busy day...

Today, 7/7 we've spotted 2-3 Fin whales, along with a pod of Killer Whales. The small boat was launched and tissue samples were taken from one of the Fin whales. The Fin whale seemed rather curious as it approached the small boat at a close range. The Killer Whales, however, were more cunning and a tissue sample could not be taken because their swimming pattern was very erratic.

As far as birds go, we spotted several Puffins, with beautiful markings on their heads; Black footed Albatrosses, Sooty Shearwaters, Leach's Storm Petrels and lots of Seagulls. Peter Pyle and Sophie Webb have trained me in the data entry part of their observations, so I am now helping them on the bridge when possible. Tonight, I'll be learning more about the CDT cast and also the Bongo Tow.

Personal Log:
Yesterday was our first day out to sea, and my first experience with ocean swells. I will admit I did develop sea sickness – or getting my sea legs as it's called. Chief Scientist Karen Forney, joked that may my sea legs grow quickly. Ha! I'm now recovered, with no worse for wear. I guess it's a rite of passage that all sea goers must experience. So now I'm seasoned. I'm very grateful to Chief Scientist Forney who in the middle of my

sickness, came to my room and let me know about the dolphins outside. She knew I wouldn't want to miss it and she was right! A picture is attached. Another wonderful sight is the different tones of blue that can be seen when looking out over the water. The weather has been nice, and we are now in the waters off of central Oregon. We hope to be in central California by this weekend, depending on how things go. The crew and scientists are extremely supportive and patient with all of my questions, and I'm learning a lot. I'll post another log in a day or two.

Until then,
Kim

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**Log 4**
July 9, 2005
Latitude: 41.16.4' N
Longitude: 125.58.30W
Visibility: 10 miles
Wind Speed & Direction: Light and variable
Sea Wave Height: <1
Sea Swell Height: 5-6 ft.
Sea Level Pressure: 1016.0
Cloud Cover: 5/8 of sky cloudy, AS (Alto Stratus), CS (Cumulus Stratus), AC (Alto Cumulus), C (Cumulus)
Temperature: 21.8 Celsius

Scientific Log:
Yesterday was a very slow day. One of the scientists became ill the ship was diverted to Coos Bay, Oregon. After a medical evaluation, it was decided that he would return to the ship at a later time. We then left Coos Bay, and came into stormy weather, so operations were at a stand-still. We did still do bird observations, and we spotted Black footed Albatrosses, Sooty Shearwaters, Common Murres, Fulmars, and Leech's Storm Petrels. At 2100, I met with Oceanographers, Liz Zele, and Mindy Kelly and proceeded to help with the CTD and the Bongo Nets. The CTD gives scientists samples for conductivity, temperature, depth. Next, a bongo net is lowered to a specific depth (300 meters) and brought to the surface at a constant angle. In this way a variety of fish and plankton can be collected and later identified. The specimens collected are very special because many of them are species in larval stage. By looking at this microscopic view of the ocean you may easily identify it as the "nursery of the ocean", displaying the many larval forms. The tests were concluded at approx. 2300 hrs.

Today was a much busier day. Watch started at 0600 and as I was entering data for the bird observations we spotted some Blue whales. Dr. Forney decided to launch the smaller boat (the Zodiac) for a closer look at the whales. I boarded the boat with the other scientists and we were lowered into the ocean. After getting everyone secure, we took off in pursuit of the Blue whales. We spotted approximately 6 whales including a mother and calf. Biopsies were taken of these whales and we spent approximately 3 hours in pursuit to identify them. We also identified Dall's porpoise.

Personal log

I must say climbing into a Zodiac in pursuit of whales has to be one of the most exhilarating experiences I've ever had. The Zodiac skims the water at about 35 mph. and often we were airborne. The Blue whales that we found were unbelievably huge, as they can grow to 20-33 meters long. We were approximately 100 meters away from them; I could hear their blows and was amazed at their gracefulness. Besides the whales being exciting, all is going really well. I did have another bout of seasickness, but now that I'm wearing the patch, (medication for seasickness) I'm doing fine. The food here is very good, and there is down time to read, learn or watch movies. Ship life is like a great

big family and everyone gets along pretty well. Right now we are south/west of Crescent City, headed south to the Cordell Banks, Farallon Islands, and Monterey Bay Marine Sanctuaries. Soon, I'll be in closer waters. Hope all is doing well back at home. Thanks for responding to my logs, I welcome comments, corrections or questions. It keeps me busy!

Till later…

Kim

P.S. In the Zodiac, I'm the one in the back with the orange "Mustang Suit" on, looking a little confused. If you look closely you can see the biopsy dart on the side of the Blue whale.

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**Log 5**
July 10, 2005
Latitude: 38,55.2 N
Longitude: 124.22.003 W
Visibility: < 1miles
Wind Speed & Direction: 200 degrees, 8 knots
Sea Wave Height: 1-2
Sea Swell Height: 5-6 ft.
Sea Level Pressure: 1016.2
Cloud Cover: cloudy and foggy
Temperature: 21.8 Celsius

Scientific Log:
Orca's found! Yesterday evening, approximately 8 Killer Whales were tracked and observed off the bow of the McArthur II. Scientists are right now trying to determine if they are resident, off-shore, or transient whales. This they will do by looking at their saddles, the area just under the dorsal fin. It has already been determined that this pod did not have a large bull as none of the whales had the very large dorsal fin. Male bull fins can be as large at 6ft high. A southern resident Killer Whale is reported to be over 100 years old. Attached are 2 photos of the group we observed last night, and also an older picture of a baby Orca, as evidenced by the yellow/pinkish coloring. Thanks to Holly Fearnbach for the photos.

Today we are heading closer to the California coast, north of Bodega Bay. It has been foggy all day with no chance to do observations.

Personal log
I had to get these out to all of you. Seeing so many wild Orcas was breath taking. The flying bridge was full of oohs, and awes as everyone ran to get their cameras. One of the animals spy-hopped to look around and we observed them for about 40 minutes. I also thought you might enjoy the "baby" orca picture. Last night there were some juvenile's in the group, as evidenced by the smaller dorsal fins.
Enjoy
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**Log 6**
July 12, 2005
South of Big Sur, CA

Latitude: 3614.084N
Longitude: 12213.868W
Visibility: <1 mile
Wind Direction: 340
Wind Speed: 22 knots
Sea Wave Height: 5-6 feet
Sea Level Pressure: 1014.6
Cloud Cover: Foggy, Drizzle
Temperature: 14.8

Scientific Log
For the past few days, it's been either foggy or too windy to do observations. The last big sighting was on July 10th where we spotted about 30 Sperm Whales. It was easy to identify the Sperm Whales as their blow is at a 45 degree angle. Also Sperm Whales like to float at the top of the water so tracking and finding them is relatively easy. Juan Carlos Salinas and Tim O'Toole, was able to obtain 10 different biopsy samples and Holly Fearnbach and Cornelia Oedekoven obtained photo id. Sperm whales are identified by their flukes, noting scratches, tears or missing pieces. The scientists will try to identify specific whales. In the attached pictures, you will a heads of Sperm Whales, note the blow hole on the side of one, also try and look for scratches or cuts on the flukes.

Personal Log
Because of the weather, observations have been slow. Yesterday, I did observe a Humpback Whale breaching in the distance. Today I've been doing interviews, reading and doing e-mail correspondence. Hopefully the weather will clear and we can go back to regular observations to see more wildlife. Right now we're off of Pt. Sir, near Big Sur and will continue to track right outside our own coastline. Hope all is well.
Until then…
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**Interview 1**

"Capt. Cotton of the Flying Bridge"

Entering the Flying Bridge on the McArthur II is to enter into Jim Cotton's personal playground. Laughter fills his face and excitement abounds as he listens to Johnny Cash and looks through the "Big Eyes" telescopes (25 power telescopes that enable the viewer to see over 7 miles) to see what he loves most of all - marine mammals. Jim's reputation preceded him on this cruise as one of the finest marine mammal observers to be found. Jim is a Senior Mammal Observer with NOAA (National Oceanic and Atmospheric Association). He's been working for NOAA since 1978 and his primary responsibilities are; Field Biologist, Observer, Flying Bridge quality control, data editing, and photo biopsy.

Jim's background is a BA in Zoology, BA in Biology and a minor in Botany, all received at Humboldt University. One of his most rewarding projects was collecting flying fish in the East Tropical Pacific and helping Bob Pittman collect 35,000 samples to work on a new taxonomy (classification system) for flying fish.
Jim has always wanted to be a biologist, and his dedication to his field is evident. However, it's not easy being a field biologist and the hardest part is the time spent away from his daughter who is studying business and also away from his sweetheart of 15 years. Yet, he believes the sacrifice is worth it. One of the most motivating factors in his career is being able to look at animals that few people will ever see. He encourages all people to follow their dreams and especially students to learn to write well, learn computer science, and have a background in statistics. Finally, in a laugh and big smile Jim simply says, "I have the best job in the world". That says enough...

Questions answered by Jim Cotton.

Sarbjit, 5th grade:
How will you peel the skin from the whales and dolphins (for biopsy)?

Jim:  Their skin is very thin like a cuticle on you finger.  It can be cut with a scalpel. When we do a biopsy the animals don't do avoidance behavior (running away) so it doesn't look like it bothers them.  Actually, it spooks them more if you don't hit them and it splashes into the water.

Michelle – 5th grade:  How do dolphins communicate with other dolphins?

Jim:  They use echolocation, sending off a sonar wave and having it hit an object and bounce off back to them.  They also use their vision, they look around and lastly many are brightly colored allowing them to see each other more easily'

Michelle – Do young dolphins hunt their own food?

Jim:  Actually it is a learned behavior the parents teach their young.  There were school of Spotted dolphins in the Gulf of Mexico that he observed being taught how to hunt. Killer whales had surrounded prey, kept them corralled as the mother dolphins taught their babies how to hunt the prey inside of the corral. In the end the big male Killer whale ate the prey, but it gave the dolphin's good practice at hunting.

Michelle:  What do dolphins eat?

Jim:  The eat fish, squid; the Killer Whales eat marine mammals.

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**Interview 2**

"A Beautiful Birder"

Walking into the Dry Lab on the McArthur II ship, you are likely to find a quiet, unobtrusive, and humble woman, carefully and delicately sketching her latest find. You have just found Sophie Webb, Senior Bird Observer on the McArthur II. Sophie has been sailing with NOAA for over 13 years. Her responsibilities are; to census sea birds, and edit and organize data at night. Sophie's love for birds started at a young age, when living is Cape Cod she attended Audubon Camp, a camp for young Ornithologists or Birders as they are called. After that she attended Boston University, and received her BA in Biology. During college she volunteered at the New England Aquarium and worked on college projects. After college she lived in a 12 sq. ft cabin outside of Stinson Beach and also in New York, working at the Museum of Natural History painting bird specimens. Now, she does field research on ships, sketches at the Museum of Natural History, paints and is working on her latest children's book. Her accomplishments are many, she co-authored and illustrated Field Guides to Birds of Mexico and Central America published by Oxford Press and completed two children's books, My Season with Sea Birds and Looking for Penguins. She has just recently finished another book titled the Birds of Brazil.

She really loves seeing birds that you normally would not see and an interesting bird she observed is a Honduran Emerald hummingbird seen in Honduras. This is very special because one had not been identified since the mid 1950's. She views these birds during her extensive travel to locations such as the Galapagos Islands, Bolivia, Australia, Aleutian Island chain, and the Antarctica on her various research projects. Doing field work at sea can be either very busy or very quiet. To fill in the down time, Sophie, exercises, paints, writes and does e-mail.

Her career has depth and variety, and in order to be a successful birder she advises that you volunteer for field studies whenever possible. Learn good computer and camera skills, practice field sketching and learn all about birds at every opportunity.

The other day I witnessed Sophie's love for her craft. We were watching Pacific White-Sided Dolphins when all of a sudden a large flock of birds was seen. Her blue eyes sparkled with delight, when resident and long distance birds were identified. Some birds had traveled to the area from New Zealand, the Artic, Hawaii and Chile. These long distance birds come to this area because it is so productive.

Sophie is an inspiration to all women, especially girls or women wishing to enter scientific fields. She demonstrates that being a scientist is fun and exciting, yet she advises, that you have to stand your ground and sometimes be assertive yet non-confrontational.
Sophie demonstrates that she has all these talents as evidenced by her successful and beautiful career.

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**Interview 3**

"Making a Difference, One Survey at a Time"

Conservation, helping our oceans and educating others is Karin Forney's goal. As a young girl, she was mystified by the ocean, but moved overseas to Germany. Missing the ocean, she knew she had to return and when she did she became one of the leading experts in the field of whales and porpoises on the West Coast. Karin is one of a few scientists in the Coastal Marine Mammal Program which focuses on determining the numbers of marine life, human impact and what influences their population. During the CSCAPE (Collaborative Survey Cetacean Abundance Pelagic Ecosystem) project, she is serving as Chief Scientist. Her position while on the ship for 3 legs is that of Cruise Leader who is responsible for all aspects of the research program while under way. In port, at her home base in Santa Cruz, California, her job responsibilities are to assess marine mammal populations in the EEZ, (exclusive economic zone) of CA/OR/WA and Hawaii. To do this she conducts surveys to estimate abundance and trends, studies stock structures and sub-populations. She also estimates the human caused mortality of marine mammals by the fishing industry and ship strikes. This she does by applying a formula to evaluate the level of human take that will still sustain a population. If the level is too high she then works with the fisheries to bring down the mortality rates caused by humans.

Karin's broad background in marine science has given her the skills and knowledge that she needs to make a difference. Karin received her BA in Ecology Behavior and Evolution, her MA in Biology both from UC San Diego, and her PhD. in Oceanography, studying at the Scripps Institution of Oceanography. Her dissertation focused on the variability of marine ecosystems and how it affects abundance, using environmental data to predict when and where marine mammals will be found.

Married, to another Marine Biologist, Karin spends extensive amounts of time working in the field. She loves seeing the animals, yet sometimes it's difficult when the weather is bad and observations can't be made.

Karin has had many accomplishments, but she's been personally moved by the fact that 18 years ago, she didn't know anything about marine mammals, and now she's a leading expert in her field. She's grateful for the opportunities she's had to learn about cetaceans and most importantly always tries to teach others about conservation efforts to help our marine environment. She advises to never underestimate the potential to do damage to our oceans, every meal, fish, and trash has implications for species.

For a person interested in becoming a Marine Scientist, she recommends that you develop a broad knowledge base, learn physics, chemistry and math. You may like dolphins and whales, but you need to develop good skills. Karin's computer programming skills got her this job, even though she was a Marine Biologist. She also recommends that you follow your heart, and do a good job at whatever you do. Also be flexible and seize opportunities when they become available to you.

Answers to students questions:
Elijah – 3rd grade: How deep is the ocean?
Karin: The deepest parts are over 30,000 feet, (10,000 meters), but most of the oceans are about 12,000 feet (400 meters) deep. That's about 2.5 miles deep.

Jennie 5th grade: Where do you find dolphins, whales, sea otters and seals?
Karin: All in the ocean. (Ha) Some prefer closer to shore like the otters and Bottlenose Dolphins, some are far from shore like Sperm Whales. Essentially, you can find marine mammals everywhere.

Amber – 5th grade: What do jellyfish eat?
Karin: Jellyfish are fierce predators. They capture zooplankton, little fish and larval crabs. Because Jellyfish are clear, you can look into their stomachs and see what they've been eating,

Sana – 5th grade: Why are most small fish skinny and thin?
Karin: Actually it's hydrodynamic, they are like little torpedoes. If they swim a lot they are long and thin, whereas; bottom dwellers are rounder. Also the little fish need to swim fast to get away.

Sana – 5th grade: Do sharks eat anything else but fishes?
Karin: Sharks also eat marine mammals, including; seals, sea lions, squid, Blue sharks eat krill too.

Haleermah – 5th grade: How much do dolphins weigh?
Karin: The littlest ones weigh about as much as a fifth grader, (90 lbs). The biggest ones- a male Killer Whale, can weigh over 8 tons.

Haleermah – 5th grade: Do whales ever bite?
Karin: Baleen whales have no teeth, they swallow things whole, toothed whales – the dolphins will bite, sort of like a “bad dog”. Killer Whales generally don’t bite people, but they will bite each other.

Vince Rosato – 4th/5th grade Teacher – How many varieties of dolphins are there? What is the percent of Bottlenose Dolphins? What are the differences between porpoises and dolphins?
Karin: There are approximately 40 different dolphin species. The Bottlenose is the most abundant near shore, yet they are a small fraction of the total dolphin population. Less than 10% of all dolphins are Bottlenose. The difference between porpoise and dolphins are:

1. Their skull shape – the porpoise has a blunt head,
2. Teeth – tooth shape in a dolphin is conical, the porpoise is spade like.
3. Porpoises are in smaller groups – less social.
4. Porpoises are generally found in the higher latitudes except the Finless porpoise.

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McArthur II

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**Interview 4**

Interview with the Captain

Today, I met with Captain Daniel Morris on the McArthur II. Capt. Morris is one of 270 uniformed officers of the NOAA Corps. His assignment is varied with 2 years of duty on a ship and 3 years at shore. Capt. Morris' background is in the Navy, where he attended the Naval Academy, and was promoted from Ensign to Lt. Jr. Grade, to Lt. Upon leaving the Navy, after some time he joined the NOAA Corps. In NOAA he again started as an Ensign, Lt. Jr. Grade, Lt. Commander and he has just received a promotion to Commander. In August, Dan will be completing this tour of ship duty and will then be posted at NOAA headquarters in Silver Spring, Maryland. While on board the McArthur II, Capt. Morris is responsible for all the operations on the ship, and the safety of personnel on board. One of his challenges as Captain is to make the ship a better place to work and live. Captain Morris is on-call at all times aboard the McArthur II. He is consulted with navigation questions and vessel traffic situations. During his down time he likes to ride his stationary bike and read. He keeps in contact with his wife who he met while he was a sailing instructor in the Navy and two daughters who live in Gloucester, Massachusetts via e-mail. In the past, Dan has sailed the original McArthur, and the Ferrel. A port of call that he really enjoyed was in Panama, where he spent time with a friend whose backyard was in a rainforest. He describes life on board a ship like a very small city, and close attachments are made. All personnel who have experienced storms and challenging situations work harder together and become closer. There are 22 people who work together to run the ship, and Capt. Morris, admires the crew who work onboard a ship year in and year out. Capt. Morris also believes that educating others about sea life is important as he's done outreach and worked with teachers to give them reports and pictures from sea to share with their students. His advice for anyone wanting a career in maritime is to learn the skills you need for working on board a ship. He also stresses the importance of learning the Maritime traditions, and getting a mentor to help you to get the most out of a maritime career.

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**Interview 5**

Interview with the Engineering Dept.

The Engineering Department onboard the McArthur II is really amazing. They are responsible for many of the operations on board. They maintain and operate the 4 generators that provide all the electricity. One generator can power 10, 075 light bulbs! The electric/diesel engine has 3400 HP and consumes 2,850 gallons of fuel a day. The ship that was built in 1984 was originally a Navy spy ship, spying on submarines. The ship also makes its own water by taking in sea water, boiling it, letting it evaporate, treating it, and then it can be used by everyone on the ship. The ship processes approx. 2400 gallons of water and 2200 gallons are used, so a 2 day reserve is kept on board. The ship also has a machine shop to fix or create parts that my break down while out at sea. The ship has two propellers and its top speed is 11.5 knots. The ship can go 90 days at 3 knots. The ship has 7 levels including the fly bridge. The person in charge of the Engineering Department is Jay Prueher who is the Chief Engineer. He's worked for NOAA for 10 years and has a total of 20 years in Alaska. His favorite ports are Sitka and Juneau. What he likes best about ship life is no commute and dislikes being away from his family. His wife, who won the Washington State lottery, resides in their home in the Cascade Mountains with their 6 cats and 6 dogs. During his time off, he likes to visit his daughter in warm and dry Tennessee. He really likes this department because all the engineers work together to envision what the scientists need to complete their mission. Then they plan to make it real. Even though Jay does enjoy his job, he plans to retire in 1 year, 11 months and 13 days, to spend time with his family in their beautiful home.

Thanks to all the engineering staff for touring me around and teaching me about the ship.

Photo order
1. Jay Prueher
2. Luke Staiger, Jim Reed
3. Jim Johnson
4. June Bruns


3-94-2
3-94-1